

UNITED STATES PATENT OFFICE.

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VEHICLE.

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To all whom it may concern:

Be it known that I, JOSEPH A. WILLIAMS, a citizen of the United States, and a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and Improved Vehicle, of which the following is a full, clear, and exact description.

My invention relates to vehicles, it being particularly applicable to those propelled by motors.

It has for its principal objects the provision of means for connecting to the same supporting-wheels both the vehicle steering and driving mechanism.

It consists in the various features and combinations hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a central vertical transverse section through a portion of a vehicle-frame and one of its wheels, one embodiment of my invention being associated therewith. Fig. 2 is a top plan view thereof. Fig. 3 is a vertical section on the line 3 3 of Fig. 2. Fig. 4 is a detail in plan of the supporting-yoke with the axle and steering-arm trunnioned thereon. Fig. 5 is a partial section taken in the same plane as Fig. 1 and showing another embodiment of my invention. Fig. 6 is a vertical section on the line 6 6 of Fig. 5, and Fig. 7 shows in plan the connecting-shell between the wheel and driving-ring.

F designates a vehicle-frame, but a portion of which is here shown, and this comprising a transverse member 10 and a longitudinal member 11. These are connected at their adjacent ends by a fitting 12, from which project opposite yoke-arms 13 13. Trunnioned between these arms is a supporting-bar 14, having screws 15 with cylindrical heads 16, which fit in openings in the arms. Extending from the supporting-bar is an axle 17, upon which is journaled a wheel 18, there being preferably provided interposed ball-bearings 19 of any convenient form. From the inner side of the hub of the wheel projects a flange 20, to which is secured a shell 21, preferably made in sections for convenience in assembling and fastened to the flange by screws 22. This

shell is parti-circular in form, its spherical surface being that described from a center located midway of the axis of the trunnion-bar. It is provided with a series of equidistant slots 23, 55 lying along circumferential lines of the shell and extending parallel to the axis of the wheel. The operation of assembling the elements renders it convenient to have the inner ends of these slots open, and the elements are preferably stayed and held in their proper relation to one another by a retaining member or collar 24, which may be secured to the ends of each of the divisions between the slots. In each of these slots operates a driving projection or tooth 25 65 of any convenient form and preferably having a flange 26, contacting with the interior of the shell, and a flange 27, resting upon the exterior thereof, the adjacent faces of the flanges being curved to conform to the surfaces of the shell. These flanges serve to prevent longitudinal movement of the teeth through the slots. At the inner end of each tooth is a projection 28, preferably of cylindrical form, which extends into a peripheral groove formed 75 in an annulus or guiding member 29, which may be secured to the yoke-arms by screws 30. To swing the wheel for the purpose of steering, the trunnion-bar is shown as provided with an arm 31, and to this is articulated a rod 32, leading to steering mechanism of any desired type. Springs 33, supporting the body, may be connected at each end by a link 34 with a bracket 35, projecting from the fitting 12. To rotate the wheel, power may 85 be applied to the driving-teeth by any suitable form of gearing—as, for example, a pinion P, which preferably meshes with the teeth as they reach the horizontal plane. It will be evident that the guiding of said teeth by the groove in the annulus will cause them all to remain in one plane, and thus be properly presented to the pinion while the wheel is being turned in either direction upon its trunnion-support for the purpose of steering, the 95 shell rocking freely by them to permit this. The fact that the teeth are constrained to occupy a fixed plane which is, moreover, always vertical to the frame allows other forms of gearing, such as a chain, to be applied for connection with the motor. Instead of these 100 independent or floating teeth a series of con-